

US-PAT-NO: 5758294

DOCUMENT-IDENTIFIER: US 5758294 A

TITLE: Radio port in a wireless personal  
communication system

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Abstract Text - ABTX (1):

The present invention relates to a radio port in a wireless personal communications system. The radio port includes a first channel in communication with a first subscriber unit, a second channel in communication with a second subscriber unit, and a switching device connecting the first channel to the second channel so that the first subscriber unit may communicate directly with the second subscriber unit. In another preferred embodiment, the radio port includes a plurality of antennas, an RF receive section, an RF transmit section, an analog port adapted for connection to an analog telephone line, a digital dataport for receiving and transmitting digital signals, and a databus interconnecting the RF receive section, RF transmit section, analog port, and digital dataport. The RF receive section includes a diversity selection unit receiving an input signal from each of the antennas. The RF transmit section generates an output signal to be transmitted over at least one of the antennas.

Brief Summary Text - BSTX (2):

Wireless access communications systems (WACS) and personal access communications systems (PACS) strive to provide flexible communication services

in a wireless fashion. WACS and PACS, in personal communication services (PCS) environments, may provide a system for improving or eliminating drop wire requirements to homes and businesses. Radio transmitters are the vehicle for eliminating the need for wiring.

Brief Summary Text - BSTX (5):

A consortium of telecommunication entities has recently developed a proposed standard for providing WACS PCS. This standard outlines the above-mentioned architecture. Further details concerning this proposed standard are set out in Bellcore Corp. publication TR-INS-001313 entitled Generic Criteria for Version 0.1 Wireless Access Communications Systems (WACS) published October 1993 (herein sometimes referred to as the specification). The publication is available to those interested in WACS PCS from Bellcore Corp. at Bellcore, Customer Services, 8 Corporate Place--Room 3C-183, Piscataway, N.J. 08854-4156, or at 1 (800) 521-CORP. Also, the reader may refer to Bellcore manual SR-ARH-002315 describing specific modulator and demodulator requirements in the SU and the RP. Additionally, the U.S. Telecommunications Industry Association (TIA) has recently approved a PACS standard as set forth in TIA publication JTC(AIR)/95.4.20-033R2. The reader is presumed to be familiar with the specification and with related technological issues known to those having ordinary skill in the art.

Brief Summary Text - BSTX (8):

The present invention relates to a radio port in a wireless personal communications system. The radio port includes a plurality of antennas, an RF receive section, an RF transmit section, an analog port adapted for connection

to an analog telephone line, a digital dataport for receiving and transmitting digital signals, and a databus interconnecting the RF receive section, RF transmit section, analog port, and digital dataport. The RF receive section includes a diversity selection unit receiving an input signal from each of the antennas. The RF transmit section generates an output signal to be transmitted over at least one of the antennas. Preferably, the plurality of antennas are positioned spatially and angularly diverse from each other, and the diversity selection unit preferably uses a signal randomization process, such as a frequency hopping process, an antenna hopping process, or a time interleaving process.

#### Brief Summary Text - BSTX (10):

Another preferred embodiment incorporates the radio port into a wireless communications system including a communications link, a first radio port, and a second radio port in direct communication with the first radio port via the communications link. The communications link may carry audio, video, and/or data signals and may use any method of communication, preferably digital, such as a Ti line, coaxial cable, microwave connection, or fiber optic link.

#### Detailed Description Text - DETX (7):

The standard RP 50 also performs radio channel measurements measuring the performance of SUs 20 and the RP 50. Controlled by the microprocessor 52, the radio channel measurement 54 is made and information is sent to the RPC for processing with each burst. Voice and data signals broadcast over a radio link at RF frequencies are received at the RP 50. The RF frequencies are downconverted from the RF frequencies to a 400 kbps data

stream in order to  
recover the information in the signal. The 400 kbps data  
stream is decoded,  
processed through a radio channel measurement unit 54 and  
then sent through a  
line interface card 55 for transmission over a T1 line  
connected to an RPC.  
The decoded information received from an SU 20 and sent on to  
the Ti line is  
preferably in a 64 kbps PCM format. Conversely, signals  
received from the RPC  
are processed first through a line interface card 55  
controlled by a  
microprocessor 52 and then encoded and converted to RF  
frequencies for  
transmission to an SU 20.

Claims Text - CLTX (1):

1. A radio port for receiving and transmitting digital  
information using a  
TDM/TDMA protocol in a wireless personal communications  
system, said radio port  
comprising:

Claims Text - CLTX (6):

a call switching device, connected to the RF receive and  
transmit sections,  
said switching device communicating information between a  
first subscriber unit  
and a second subscriber unit, said first and second  
subscriber units in  
communication with the radio port wherein the first and  
second subscriber units  
communicate directly via the radio port and independently of  
any other  
switching device.

Claims Text - CLTX (11):

an RF receive section for receiving digital information in  
time division  
multiple access (TDMA) format, the RF receive section  
including a diversity  
selection unit receiving an input signal from each of the  
antennas;

Claims Text - CLTX (19):

9. The radio port of claim 4 further comprising a circuit having two receive chains for downconverting radio frequency signals in a wireless personal communications system, each receive chain comprising:

Claims Text - CLTX (37):

18. A method of communicating information in a wireless personal communications system comprising the steps of: